



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

[Notice: (22-041)]

Centennial Challenges Break the Ice Lunar Challenge Phase 2 Registration

AGENCY: National Aeronautics and Space Administration (NASA).

ACTION: Notice.

SUMMARY: Phase 2 of the Break the Ice Lunar Challenge is open, and teams that wish to compete may now register. NASA seeks to stimulate research and technology solutions to support future missions and inspire new national aerospace capabilities through public prize competitions called Centennial Challenges. The Break the Ice Lunar Challenge is one such competition.

Centennial Challenges are managed at NASA's Marshall Space Flight Center in Huntsville, Alabama and are part of the Prizes, Challenges, and Crowdsourcing program within NASA's Space Technology Mission Directorate at the agency's Headquarters in Washington. Phase 2 of the Break the Ice Lunar Challenge is a prize competition with a total prize purse of \$3,000,000 USD, (three million United States dollars) to be awarded to competitor teams that build and successfully demonstrate prototypes of novel excavation and transportation technologies that can operate in Lunar environmental conditions.

DATES: Phase 2 registration opens June 2, 2022, and will remain open until September 30, 2022, (11:59 PM Eastern). No further requests for registration will be accepted after this date. Other important dates, including deadlines for key deliverables from the teams, are listed on the Challenge website: www.nasa.gov/breaktheice.

ADDRESSES: Phase 2 of the Break the Ice Lunar Challenge will include both virtual and in-person portions. Initial Levels of the Challenge will be virtual with competitor teams working on their solutions at a facility of their choosing and then submitting the deliverables listed in the Official Challenge Rules to NASA. Final Level of the Challenge will include an in-person competition at a facility chosen and prepared by NASA. Further details about this facility will be

posted on the Challenge website.

FOR FURTHER INFORMATION CONTACT:

To register or for additional information regarding the Break the Ice Lunar Challenge, please visit: www.nasa.gov/breaktheice.

Questions and comments regarding the challenge should be addressed to Denise Morris, 256-544-3989, Centennial Challenges Program Manager (Acting), NASA Marshall Space Flight Center Huntsville, AL 35812. Email address: hq-stmd-centennialchallenges@mail.nasa.gov. For general information on NASA prize competitions, challenges, and crowdsourcing opportunities, please visit: www.nasa.gov/solve.

SUPPLEMENTARY INFORMATION:

Summary:

The goal of Phase 2 is to further the development of technologies that can excavate and transport large quantities of icy lunar regolith and can address the technology gaps listed below. Through a prototype demonstration, Teams must show that their solutions address the reliability, durability, and traversability challenges these systems must overcome to operate for long durations.

The specific NASA technology gaps that Phase 2 aims to address include:

- Excavate large quantities of icy regolith
- Delivery of large quantities of acquired resources
- Hardware and equipment that is lightweight and energy efficient
- Hardware and equipment that is reliable and durable
- Hardware and equipment that operates well in extreme lunar environmental conditions, including:
 - Reduced gravity
 - Complex terrain including rocks, craters, slopes, and loose granular soil

Successful demonstrations from this challenge will complement ongoing NASA investments in lunar In-Situ Resource Utilization Technologies. NASA is funding the prize purse and

administration of the challenge competition. Any eligible individual or organization may participate in Phase 2. Teams are not required to have participated in Phase 1

I. Prize Amounts

The Break the Ice Lunar Challenge Phase 2 total prize purse is \$3,000,000 USD (three million United States dollars) to be awarded across Phase 2 of this competition. There will be three levels in Phase 2. The winners will be determined by a Judging Panel. Teams must meet the eligibility requirements for the NASA prize in order to receive a prize from NASA.

- Level 1 – All Teams that submit compliant deliverables by the submission deadline will receive an equal share of \$500,000 prize purse up to a maximum of \$75,000 per Team.
- Level 2 – 1st Place - \$300,000, 2nd Place - \$200,000, 3rd Place - \$125,000 and up to five (5) runners up with each runner up receiving \$75,000 for a total prize purse of \$1,000,000.
- Level 3 – 1st Place - \$1,000,000 and 2nd Place - \$500,000 for a total prize purse of \$1,500,000. In addition to the cash prizes NASA will award opportunities to test concepts in a dusty Thermal Vacuum Chamber.

II. Eligibility to Participate and Win Prize Money

In order to participate in the Challenge, each individual, whether acting alone or as part of a Competitor Team must identify their nationality.

- No individual competitor shall be a citizen of a country on the NASA Export Control Program list of Designated Countries List Category II: Countries determined by the Department of State to support terrorism. The current list of designated countries can be found at <http://oiir.hq.nasa.gov/nasaecp>. Please check the link for the latest updates. This includes individuals with dual citizenship unless they are a U.S. citizen or a lawful permanent U.S. resident (green card holder).
- While China is not a Category II designated country, pursuant to Public Law 116-6, Section 530, NASA is prohibited from participating, collaborating, or coordinating bilaterally in any way with China or any Chinese-owned entity. Team members who are citizens of China but not affiliated with a Chinese entity may be permitted to participate on a Team.

- Subject to the conditions set forth herein, foreign nationals and foreign national Teams can participate in the Challenge. However, they are not eligible for a cash prize, and must acknowledge acceptance of this by signing and submitting a Foreign Participant Acknowledgement Form.
- A competitor Team-designated lead shall be responsible for both compliance with the rules (including prize eligibility rules) and the actions of all members of the Team.

In order to be eligible to win a prize:

1. Individuals must be U.S. citizens or permanent residents of the United States and be 18 years of age or older.
2. Organizations must be an entity incorporated in and maintaining a primary place of business in the United States.
3. Teams must be comprised of otherwise eligible individuals or organizations and led by an otherwise eligible individual or organization.
4. Team leader must be a U.S. citizen or permanent resident.

A Team may include foreign nationals and be eligible to win prize money as long as the foreign national signs and delivers a disclosure (separate form) wherein he/she discloses his/her citizenship and acknowledge that he/she is not eligible to win a prize from NASA, AND

1. The foreign national is an employee of an otherwise eligible U.S. entity participating in the Challenge,
2. The foreign national is an owner of such entity, so long as foreign citizens own less than 50% of the interests in the entity,
3. The foreign national is a contractor under written contract to such entity, OR
4. The foreign national is a full-time student, during the time of the Challenge, of an otherwise eligible entity which is an accredited institution of higher learning, AND the student is during the Challenge in the United States on a valid student visa and is otherwise in compliance with all local, state, and federal laws and regulations regarding the sale and export of technology.

Teams selected for an award will be required to provide proof of citizenship/permanent residency, proof of primary place of business, proof of incorporation, and/or proof of student visa. Proof must be provided within 3 business days to be eligible for an award. Any Team or team member who submitted the required proof documents in Phase 1 and was deemed eligible to compete will not be required to submit this documentation again in Phase 2. Teams must indicate which documents from Phase 1 should apply to Phase 2 entry and provide confirmation that all documents are still valid. A Team's failure to comply with any aspect of the eligibility requirements shall result in the Team being disqualified from winning a prize from NASA.

Interested teams should refer to the official Challenge website (www.nasa.gov/breaktheice) for full details on eligibility requirements and registration.

III. Official Rules

The complete official rules for the Break the Ice Lunar Challenge, can be found at:

<https://breaktheicechallenge.com/>.

Cheryl Parker,

NASA Federal Register Liaison Officer.

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